- 1. A method of increasing or maintaining the number of functional cells of a predetermined type in a mammal, comprising the steps of:
  - a) exposing said mammal to MHC class I and peptide, and
- b) prior to, after, or concurrently with step a), treating said mammal to kill or inactivate autoimmune cells of said mammal.
  - 2. The method of claim 1 wherein step a) comprises exposing said mammal to a MHC class I/peptide complex or exposing said mammal to cells capable of expressing MHC class I and peptide.
  - 3. The method of claim wherein said method further comprises maintaining the blood glucose level in said mammal within a normal range.

A method of increasing or maintaining the number of functional cells of a predetermined type in a mammal, said method comprising the steps of:

- a) providing a sample of cells of said predetermined type,
- b) treating said cells to modify the presentation of an antigen of said cells that is capable of causing an *in vivo* autoimmune cell-mediated rejection response,
  - c) introducing said treated cells into said mammal, and
- d) prior to, after, or concurrently with step c), treating said mammal to kill or inactivate autoimmune cells of said mammal.

The method of claim 4, wherein said mammal is a human patient.

The method of claim 5, wherein said cells are insulin-producing islet

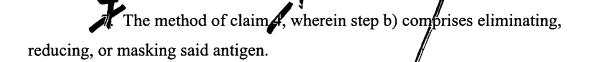
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cells.

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8. The method of claim 4, wherein step d comprises administering to said mammal TNF-alpha or a TNF-alpha inducing substance.

The method of claim 8, wherein the TNF-alpha inducing substance is tissue plasminogen activator, LPS, interleukin-1, UV light, or an intracellular mediator of the TNF-alpha signaling pathway.

10. The method of claim 1, wherein said mammal has a mutation in the

lmp2 gene.

11. The method of claim 4, wherein said mammal has a mutation in the lmp2 gene or equivalent thereof.

A method of increasing the number of functional cells of a predetermined type in a mammal, said method comprising the steps of:

- a) treating said mammal with an agent that kills or inactivates autoimmune cells of said mammal;
- b) periodically monitoring the cell death rate of said autoimmune cells; and
- c) periodically adjusting the dosage of said agent administered to said mammal based on the monitoring of step b).

13. The method of claim 12, wherein said agent comprises TNF-alpha, a

TNF-alpha inducing substance, tissue plasminogen/activator, LPS, interleukin-1, UV light, or an intracellular mediator of the TNF-alpha signaling pathway.

14. The method of claim 8, wherein step d) comprises administering to said mammal two agents that increase TNF-alpha.

15. The method of claim 12, wherein step a) comprises administering to said mammal two agents that increase TNF-alpha.

A method for diagnosing an autoimmune disease or the predisposition to said disease in a mammal, said method comprising the steps of:

- a) providing peripheral cells from a mammal,
- b) treating said cells with a TNF-alpha treatment regimen, and
- c) detecting cell death of said peripheral cells, wherein an increase in cell death, when compared with control cells, is indicative of said mammal having an autoimmune disease or a predisposition to said disease.

17. The method of claim 16, wherein said peripheral cells comprise splenocytes, T lymphocytes, B lymphocytes, or cells of bone marrow origin.

18. The method of claim 16, wherein said mammal is a human patient.

The method of claim 16, wherein said TNF-alpha treatment regimen comprises treating said peripheral cell with TNF-alpha.

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